WE CLAIM

1. A method of processing a spectrally-encoded digital audio signal comprising band data components representing audio contributions in respective frequency bands, said method comprising the steps of:

altering a subset comprising one or more of said band data components to produce a band-altered digital audio signal having altered band data components; and

generating recovery data to allow original values of said altered band data components to be reconstructed.

2. A method according to claim 1, comprising the step of encrypting said recovery data.

3. A method according to claim 1, in which said recovery data comprises said subset of said band data components.

4. A method according to claim 1, in which said altering step comprises replacing one or more of said band data components by corresponding band data components from a spectrally-encoded digital audio watermark signal, multiplied by a scaling factor.

5. A method according to claim 1, in which said altering step comprises combining one or more of said band data components with corresponding band data components from a spectrally-encoded digital audio watermark signal.

6. A method according to claim 1, in which said subset of said band data components is a predetermined subset of said band data components.

7. A method according to claim 1, in which said recovery data defines which of said band data components are in said subset of said band data components.

8. A method according to claim 4, comprising the step of:

detecting which of said band data components of said watermark signal are most significant over at least a portion of said watermark signal, said most significant band data components forming said subset of said band data components.

9. A method according to claim 8, in which said detecting step comprises detecting which of said band data components of said watermark signal are most significant over the entirety of said watermark signal.

10. A method according to claim 8, in which said watermark signal and said digital audio signal are each encoded as successive data frames representing respective time periods of said watermark signal and said digital audio signal, said detecting step comprising:

detecting which of said band data components of said watermark signal are most significant over a group of one or more of said data frames of said watermark signal, said most significant band data components forming said subset of said band data components in respect of a corresponding group of one or more frames of said digital audio signal.

11. A method according to claim 5, comprising the step of:

detecting which of said band data components of said watermark signal are most significant over at least a portion of said watermark signal, said most significant band data components forming said subset of said band data components.

12. A method according to claim 11, in which said detecting step comprises detecting which of said band data components of said watermark signal are most significant over the entirety of said watermark signal.

13. A method according to claim 11, in which said watermark signal and said digital audio signal are each encoded as successive data frames representing respective time periods of said watermark signal and said digital audio signal, said detecting step comprising:

detecting which of said band data components of said watermark signal are most significant over a group of one or more of said data frames of said watermark signal, said most significant band data components forming said subset of said band data components in respect of a corresponding group of one or more frames of said digital audio signal.

14. A method according to claim 4, comprising the step of detecting which of said band data components of said watermark signal differ most significantly from corresponding band data components of said digital audio signal over at least corresponding portions of said watermark signal and said digital audio signal, said most significantly differing band data components forming said subset of said band data components.

15. A method according to claim 5, comprising the step of detecting which of said band data components of said watermark signal differ most significantly from corresponding band data components of said digital audio signal over at least corresponding portions of said watermark signal and said digital audio signal, said most significantly differing band data components forming said subset of said band data components.

16. A method according to claim 7, in which said band data components forming said subset of said band data components are defined by a pseudo-random function.

17. A method according to claim 1, in which said digital audio signal is stored in a data format having at least:

format-defining data specifying a quantity of data available to store said digital audio signal;

said band data components; and

zero or more ancillary data space.

18. A method according to claim 17, comprising the step of storing said recovery data in said ancillary data space.

19. A method according to claim 17, comprising the step of altering said format-defining data to specify a larger quantity of data to store said digital audio signal, thereby increasing the size of said ancillary data space.

20. A method according to claim 1, comprising the step of appending said recovery data to said band-altered digital audio signal.

21. A method according to claim 1, comprising the step of adjusting the number of said band data components in said subset of said band data components in accordance with the data capacity available for said recovery data.

22. A method of processing a spectrally-encoded digital audio signal comprising band data components representing audio contributions in respective frequency bands and recovery data representing original values of a subset of said band data components, said

method comprising the step of altering said subset of said band data components in accordance with said recovery data to reconstruct said original values of said subset of said band data components.

23. A method according to claim 22, comprising the step of decrypting said recovery data.

24. A method of distributing spectrally-encoded audio content material, said method comprising the steps of:

processing said spectrally-encoded audio content material in accordance with the method of claim 1 to form a band-altered digital signal and recovery data;

encrypting said recovery data to form encrypted recovery data;

supplying said band-altered digital signal and said encrypted recovery data to a receiving user; and

supplying a decryption key to said receiving user to allow said receiving user to decrypt said encrypted recovery data.

25. A method according to claim 24, in which said supplying step takes place only if a payment is received from said receiving user.

26. A method of receiving spectrally-encoded audio content material, said method comprising the steps of:

receiving a band-altered digital signal and encrypted recovery data from a content provider, said band-altered digital signal and said recovery data having been generated in accordance with the method of claim 1;

receiving a decryption key to allow decryption of said encrypted recovery data;

decrypting said encrypted recovery data to form decrypted recovery data;

processing said band-altered digital signal using said decrypted recovery data in accordance with the method of claim 22.

27. A method according to claim 26, comprising the step of:

providing a payment to said content provider.

28. Computer software having program code for carrying out a method according to claim 1.

29. A medium by which software according to claim 28 is provided.

30. A medium according to claim 29, said medium being a storage medium.

31. A medium according to claim 29, said medium being a transmission medium.

32. Computer software having program code for carrying out a method according to claim 22.

33. A medium by which software according to claim 32 is provided.

34. A medium according to claim 33, said medium being a storage medium.

35. A medium according to claim 33, said medium being a transmission medium.

36. Apparatus for processing a spectrally-encoded digital audio signal comprising band data components representing audio contributions in respective frequency bands, said apparatus comprising:

a data modifier for modifying a subset comprising one or more of said band data components; and

a data generator for generating recovery data to allow the original values of said subset of said band data components to be reconstructed.

37. Apparatus according to claim 36, comprising an encryptor for encrypting said recovery data.

38. Apparatus for processing a spectrally-encoded digital audio signal comprising band data components representing audio contributions in respective frequency bands and recovery data representing original values of a subset of said band data components, said apparatus comprising a data modifier for modifying said subset of said band data

components in accordance with said recovery data to reconstruct said original values of said subset of said band data components.

39. Apparatus according to claim 38, comprising a decryptor for decrypting said recovery data.

40. A set-top box comprising apparatus according to claim 38.

41. An audio receiver comprising apparatus according to claim 38.

42. Spectrally-encoded audio data having:
format-defining data;
band-data components; and
encrypted recovery data defining changes to said band-data components.